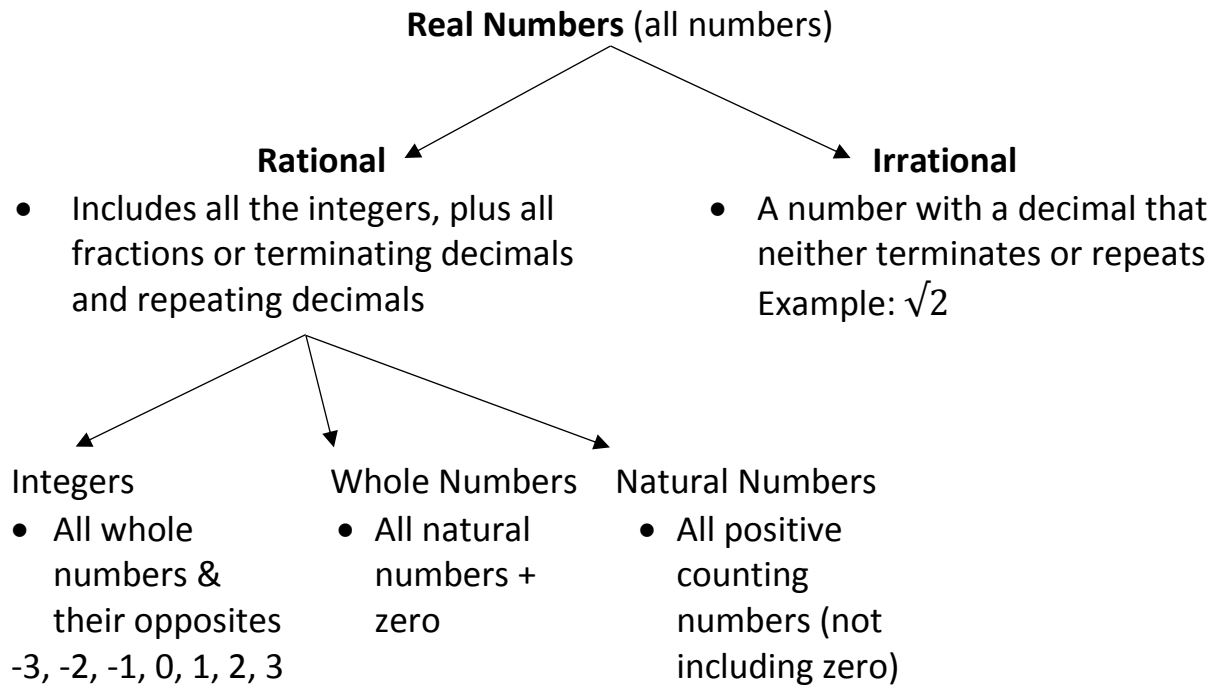


## 01 - Review Part 1 – Numbers & Operations



### Part A: Operations with integers

#### 1. Addition

ex1:  $(-12) + (-5)$

or

$$\begin{aligned} &= -12 - 5 \\ &= -17 \end{aligned}$$

ex2:  $18 + (-5)$

or

$$\begin{aligned} &= 18 - 5 \\ &= 13 \end{aligned}$$

#### 2. Subtraction

ex1:  $-15 - (-8)$

$$\begin{aligned} &= -15 + 8 \\ &= -7 \end{aligned}$$

ex2:  $10 - x$

let  $x = -2$

$$\begin{aligned} &= 10 - (-2) \\ &= 10 + 2 \\ &= 12 \end{aligned}$$

### 3. Multiplication and Division

ex1:  $6 \times 8$

$$= 48$$

ex2:  $(-36) \div (-9)$

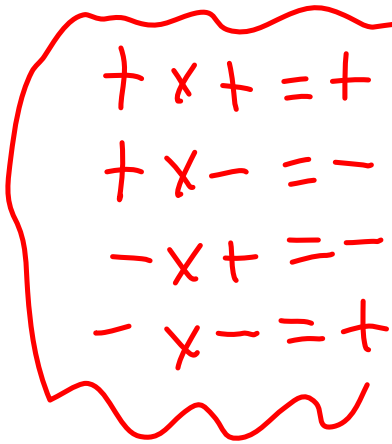
$$= 4$$

ex3:  $-5 \times 9$

$$= -45$$

ex4:  $54 \div (-6)$

$$= -9$$



$+$   $\times$   $+$   $=$   $+$   
 $+$   $\times$   $-$   $=$   $-$   
 $-$   $\times$   $+$   $=$   $-$   
 $-$   $\times$   $-$   $=$   $+$

### More Than One Operation

B	Brackets
E	Exponents
D	Division
M	Multiplication
A	Addition
S	Subtraction

} which ever comes first  
} same

ex1:  $-10 \times (-4) + 10 \div (-5)$

$$= \overset{\vee}{40} + \overset{\vee}{(-2)}$$

$$= 38$$

ex2:  $-6 + 9 \times -5$

$$= -51$$

## Part B: Operations with Rational Numbers

### Addition and Subtraction

$$\begin{aligned}
 & \frac{-2}{5} + \frac{3}{-2} - \frac{3}{10} \\
 & = \frac{-4}{10} + \frac{15}{-10} - \frac{3}{10} \\
 & = \frac{-4}{10} - \frac{15}{10} - \frac{3}{10} \\
 & = \frac{-22}{10}
 \end{aligned}$$

Handwritten notes:  $15 \div -10 = -1\frac{1}{2}$ ,  $-11/5$

### Multiplication

$$\begin{aligned}
 & \frac{3}{4} \times \frac{-4}{5} = \frac{-12}{20} \\
 & = \frac{-3}{5}
 \end{aligned}$$

### Division

$$\begin{aligned}
 & \frac{3}{4} \div \frac{5}{-4} \\
 & = \frac{3}{4} \times \frac{-4}{5} = \frac{-3}{5}
 \end{aligned}$$

More than **One** operation: follow BEDMAS

$$\begin{aligned}
 & \frac{3}{4} \times \frac{-4}{5} \div \frac{-3}{7} \\
 & = \frac{-3}{5} \div \frac{-3}{7} \\
 & = \frac{-3}{5} \times \frac{7}{-3} \\
 & = \frac{7}{5}
 \end{aligned}$$

## Part C: Exponent Laws

Multiplication	$(a^m)(a^n) = a^{m+n}$
Division	$\frac{a^m}{a^n} = a^{m-n}$
Power of a Power	$(a^n)^m$

$$2^4 \cdot 2^3 = 2^{4+3} = 2^7$$

$$2^4 \div 2^3 = 2^{4-3} = 2^1$$

$$(4^2)^3 = 4^{2 \times 3} = 4^6$$

Examples:

1)  $(5^4)(5^{-3}) = 5^{4+(-3)} = 5^1$

2)  $\frac{4^6}{4^{-2}} = 4^{6-(-2)} = 4^8 = 4^{2 \times 4} = 3^8$

3)  $(3^2)^4 = 3^{2 \times 4} = 3^8$

**Remember....**

$\frac{-1}{3}, \frac{1}{(-3)}, -\frac{1}{3}, -\left(\frac{1}{3}\right)$  are all the same

The following mixed numbers are all equal

$-1\frac{1}{6}, -\left(1\frac{1}{6}\right), \frac{(-7)}{6}, \frac{7}{(-6)}, -\frac{7}{6}$

Exponents: What is the difference???

$-3^2 \quad (-3)^2 \quad -(-3)^2 \quad -(3)^2$

$= -9 \quad = 9 \quad = -9 \quad = -9$

$-(-3 \times -3) \quad (3 \times 3)$

Assigned Work

p. 461 # 1,3,4,5

p. 462 # 1,2

p. 463 #1-5